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**A COLLECTION OF REPTILES AND BATRACHIANS FROM BORNEO
AND THE LOO CHOO ISLANDS.**

BY ARTHUR ERWIN BROWN.

Through the courtesy of the officers of the Wistar Institute of Anatomy and Biology, I have been permitted to examine the fine collection of reptiles and batrachians, numbering 327 specimens, made by Dr. William H. Furness, Dr. H. M. Hiller and Mr. Alfred Harrison, Jr., in west and northwest Borneo and the Loo Choo Islands, between the years 1893 and 1897.

The thoroughness of previous collecting in the portions of Borneo visited by these gentlemen, is attested by the fact that the present series yields but one Bornean species hitherto undescribed; but a complete list of the species represented in the collection is here given, with such notes as contribute to our knowledge of the herpetology of those regions.

BORNEO.

REPTILLA.

CHELONIA.

***Bellia borneensis* (Gray).**

Five specimens; Kapuas river.

All about 70 mm. long. Dark olive-brown above; plastron dirty green with dark sutures. Soft parts colored like the carapace. There are some irregularities in the plates. No. 2,413 has the fourth and fifth vertebrals and the fourth costal broken up into six irregular plates. No. 2,406 has the fourth costal on one side, and the fifth vertebral transversely divided. The front of the forearm has enlarged transverse scales, but on the outer side of the hind leg they are small.

***Cyclemys platynota* Gray.**

One specimen, 70 mm. long; Baram.

Green above and below; each vertebral with a pair of small black spots and each costal with one similar spot. Sutures between all ventral shields dark.

Cyclemys dhor Gray.

Three specimens, Kapuas river; one, Sarawak; two, Borneo.

Largest, ♀, 196 mm. In the adults the carapace is distinctly flattened on the vertebral area, and an indistinct ridge is outlined by the centres of the areolæ on the costals; this does not appear in very young examples, and is first indicated in No. 2,436. 74 mm. long. In the adults the dark markings on the plastron have disappeared.

Geoemyda spinosa Gray.

Two from Kapuas river; one, Baram (collected by Charles Hose); one, Borneo.

Largest measures 200 mm. ♂. No. 5,688, from Baram, 85 mm. long, is much darker than the larger specimens.

Trionyx subplanus Geoff.

One specimen, 73 mm. long; Kapuas river.

LACERTILIA.

Gymnodactylus marmoratus Kuhl.

Two ♀; Borneo

Gonatodes kendalli (Gray).

One specimen; Kuching

Hemidactylus frenatus D. and B.

Two, Borneo, ♂, ♀; five, Kapuas river.

Hemidactylus platyurus (Schn.).

Five, Kapuas river.

Gehyra mutilata (Wieg.).

One, Sarawak; one, Kuching.

Gecko stentor (Cantor).

One, Kapuas river; one, Borneo.

Gecko monarchus (D. and B.).

One, Borneo; one, Sarawak; three, Kuching.

Draco volans L.

Eight ♂ and six ♀; Kuching, Baram.

Draco quinquefasciatus Gray.

One, Borneo; one, Kuching.

Gonyocephalus liogaster (Gunth.).

One, Borneo.

Japalura nigrilabris Peters.

One ♀, Borneo.

Calotes cristatellus (Kuhl).

Ten, Borneo; five, Kapuas river; one, Kuching; one, Baram.

Mr. Boulenger's conclusion that *C. moluccanus* can not be separated from the present species is fully justified by the specimens in this collection, which exhibit equal variability to those studied by him.

Varanus salvator (Laur.).

One adult, Borneo; one young, Kapuas river.

In both specimens the ventral scales are smooth.

Varanus heteropholis Boul.

P. Z. S. of London, 1892, p. 506, Pl. XXIX.

No. 2,380, collected by Messrs. Harrison and Hiller at Baram, Sarawak, is somewhat intermediate between *V. dumerili* and the single specimen from Mt. Dulit, described by Mr. Boulenger under the above name; but as it presents the characteristic vertebral area of granules, entirely separating the large dorsal and lateral scales, shown by that specimen, they would seem to be identical. It differs from Mr. Boulenger's specimen in that the nuchal scales are not flat, but distinctly subconical, and the ventrals are without a keel. The large nuchal and dorsal scales are more or less separated from each other by granules. The whole upper surface is dark-olive, with the black markings much as in *V. dumerili*, but the crossbands on the body are narrow and indistinct and are more or less prolonged on to the ventrals. The under surface is yellow; throat and neck with short, longitudinal black markings.

Total length 530 mm. (tail 308).

Tachydromus sexlineatus Daud.

Three, Kuching; three, Borneo.

Mabuia rugifera (Stolicz.).

Nos. 2,370, 2,444, 2,445, from Kuching, correspond exactly to *M. rugifera*, except that a postnasal is present, and the anterior loreal is rather more elevated than the second; the dorsal scales are in 28 and 29 rows. I am not inclined to separate them on account of these differences.

Mabuia multifasciata (Kuhl).

Nineteen, Sarawak; one, Kuching; seven, Borneo.

***Mabuia rufis* Boul.**

No. 2,241, from Kuching.

***Lygosoma vittatum* (Edel.).**

Three, Sarawak; two, Kuching; one, Borneo.

***Lygosoma nitens* Peters.**

One, Borneo.

***Tropidophorus brooki* (Gray).**

Nos. 5,697, 5,853, Borneo.

These specimens are each about 220 mm. long. In each of them the prefrontals are widely separated, as in the type specimen.

OPHIDIA.

***Python reticulatus* (Schn.).**

Two, Borneo; two, Baram.

***Cylindrophis rufus* (Laur.).**

Two, Kuching; two, Borneo; one, Celebes, collected by Charles Hose.

Largest specimen 380 mm.

***Xenopeltis unicolor* Reinw.**

One, Kapuas river.

Ventrals 179; subcaudals 29.

***Polydontophis geminatus* (Boie).**

No. 2,338, from Baram.

Length 485 mm. (tail 120); ventrals 150; subcaudals 51.

This specimen corresponds exactly to Gunther's description of *Ablabes flaviceps*, but is characterized by an extremely short tail, with a reduced number of subcaudals; the lowest given by Mr. Boulenger being 89.

***Tropidonotus trianguligerus* Boie.**

Nos. 5,692, 5,702, Borneo.

No. 5,702 I refer to this species, with which it agrees in scutellation, although there is a considerable difference in the color pattern, which is very obscure, but seems to consist of a row of black vertebral spots and an indistinct series of smaller ones on each side, much closer together than in typical *trianguligerus*. Each ventral heavily edged with black at the ends.

Length 720 mm. (tail 246); ventrals 140; subcaudals 105.

Dryocalamus trilineatus sp. nov.

Rostral barely visible from above; internasals much shorter than prefrontals; frontal longer than the snout, shorter than parietals; loreal long and entering orbit; no preocular, the supraocular extending down to meet the loreal; one narrow postocular; temporals 1 (2)-2; seven upper labials, third and fourth in the orbit; posterior chin shields short. Scales in 15 rows. Ventrals 228; anal entire; subcaudals 87 pairs.

Total length 285 mm. (tail 70).

Olive-brown above, with a narrow greenish-yellow vertebral stripe, and another on each side, on the fifth row of scales. Top of head olive-brown. Ventrals, outer row of scales and both series of labials of the same color as the light stripes.

Type specimen, No. 5,825 from Baram district, collected by Drs. Furness and Hiller.

This species much resembles *Dryocalamus tristrigatus* Gunth., of unknown locality, but compared with Mr. Boulenger's plate¹ the head is flatter and the upper labials less elevated, the rostral is smaller, there is but one postocular, and the color appears to be different.

Xenelaphis hexagonotus (Cantor).

One, Baram; collected by Charles Hose.

Coluber oxycephalus Boie.

Three, Kapuas river; one, Baram; one, Borneo.

Coluber melanurus Schl.

One, Kuching; three, Baram, collected by Charles Hose.

No. 5,810 has the preocular divided on one side, and 5,814 has the anterior ends of the first row of temporals cut off, forming an extra series of small temporals.

Dendrophis pictus (Gm.).

Seventeen specimens; Kuching, Kapuas river, Baram, Sarawak.

No. 2,374, from Baram, 780 mm. long (tail 250), ventrals 169, subcaudals 121, is bluish-black above with the lateral stripes very indistinct; belly yellow, much marked with blue posteriorly. No. 5,691 has the loreal horizontally divided on both sides; temporals 1-2.

¹*Cat. of Snakes in Brit. Mus.*, I, p. 372, Pl. XXV, fig. 3.

Dendrophis formosus Boie.

One, Kapuas river.

Dendrelaphis candonatus (Gray).

Eight specimens; Kapuas river, Kuching, Baram.

No. 2,378, from Baram, 1,160 mm. (tail 300), ventrals 183, subcaudals 97, is dark bluish-black with obscure lateral stripes; belly slate color.

Simotes octolineatus (Schn.).

One, Sarawak; two, Baram; one, Borneo.

Ablabes tricolor (Schl.).

One, Borneo.

Calamaria vermiformis D. and B.

Two, Borneo.

No. 5,816 has the body completely encircled by alternating rings of brownish-black and pale-yellow, the dark rings being widest on the back and the light ones exactly the reverse; whole head pale-yellow; length 172 mm. (tail 13). This corresponds to the form described by Gunther as *C. flaviceps*.

Hypsirhina enhydris (Schn.).

Two, Kapuas river.

No. 2,561 has ventrals 157; subcaudals 31.

Hypsirhina doriae (Peters).

No. 2,811, Kapuas river.

The example which I refer to this species corresponds nearly to Peters' description and plate. It has, however, but 27 rows of scales. The head shields are quite anomalous; the left internasal is divided, as is also one of the parietals, and the anterior temporal on one side. Length 810 mm. (tail 95); ventrals 160; subcaudals 44. The yellow of the ventral surface extends to the four outer rows of scales, where it becomes reddish, as it does on both series of labials.

Dipsadomorphus dendrophilus (Boie).

Three, Borneo.

Dipsadomorphus cynodon (Boie).

Two, Baram; one, Kapuas river; one, Borneo.

Psammodynastes pulverulentus (Boie).

No. 2,569, Kapuas river, length 625 mm. (tail 128); ventrals

164; subcaudals 70. No. 2,567, same locality, length 515 mm. (tail 120); ventrals 161; subcaudals 69.

Psammodynastes pictus Gunth.

Three specimens from Kapuas river.

No. 2,236 is 518 mm. long (tail 118); ventrals 159; subcaudals 80. Body slender and stripes only indicated. In form and proportions this species is very closely approached by No. 2,567 (*P. pulverulentus*), and the distinctness of the two species appears to me questionable.

Dryophis prasinus Boie.

Ten specimens; Kapuas river, Kuching, Baram.

Chrysopelea ornata (Shaw).

No. 5,690, Baram district, 898 mm. (tail 250); ventrals 213 (the last one divided); subcaudals 135. The light spots on the back are confluent into an almost continuous vertebral stripe, becoming obscure toward the tail. The ventrals are unmarked, and the subcaudals have narrow black margins.

Enhydrina valakadien (Boie).

One, Baram; one, Borneo.

The Baram specimen, 840 mm. long (tail 115), has a pair of elongated shields detached from the inner border of the parietals, immediately behind the frontal.

The color is greenish-gray above in one specimen, and lead color in the other; beneath, yellow.

Bungarus fasciatus (Schn.).

One, Baram; one, Borneo.

Bungarus flaviceps Reinh.

One, Baram. Collected by Charles Hose.

Naia naia (L.).

One, Kuching.

Dark-olive, without markings except side of head and throat yellowish.

Lachesis wagleri (Boie).

Thirteen specimens; Kapuas river, Kuching, Baram. There is much variation in the color of these specimens. Some are green, many dorsal scales and the ventrals with yellow borders; others are green above, some scales with yellow centres, the wholly green ones

being arranged in narrow crossbands, the ventrals yellow, edged with dark-green. No. 2,337, from Baram, 355 mm. long, is bluish-brown on the body, green on the tail, all the scales with narrow pale margins; ventrals greenish-white with pale borders.

Lachesis sumatrana (Raffles).

One, Baram. Collected by Charles Hose.

Batrachia.

ECAUDATA.

Rana macrodon Kuhl.

Two, Borneo.

Rana tigrina Dand.

Nine, Baram river; Borneo.

These specimens are all young; the head and body in the largest measuring but 65 mm.

Rana erythraea (Schl.).

One, Kapuas river; one, Baram; two, Borneo.

Length of head and body in the largest 67 mm.; hind limb 108 mm.

Rana everetti Boul.

Cat. Bat. Sal. in Brit. Mus., p. 73, Pl. VI.

Two, Borneo; one, Baram river.

These specimens correspond closely to Mr. Boulenger's description and plate. No. 5,768 is the largest and measures 78 mm. from snout to vent; hind leg 127. In each of them the anterior end of the vomerine teeth is about even with the inner anterior border of the choanæ.

Rana glandulosa Boul.

Cat. Bat. Sal. in Brit. Mus., p. 73, Pl. VII.

No. 5,778, Baram river; No. 5,767, Miri, Sarawak; No. 5,764, Borneo.

The three specimens which I refer to this species have the interorbital space rather wider than it is figured by Mr. Boulenger. The color is either dark-brown or olive above, slightly spotted or marbled with black; beneath yellow, spotted with black, most heavily on the throat and under surface of thighs; jaws black, with three or four vertical yellow bars, the largest of which is between the eye and the tympanum. The Miri specimen, 55 mm. head and body, is much more distinctly marbled with black on both surfaces

than the two older examples; the legs are distinctly crossbanded with black.

Rhacophorus maculatus (Gray).

No. 5,808, Borneo, measuring but 32 mm. head and body, is referred with some hesitation to this species, both the tympanum and digital disks being small. This may be a juvenile character.

Calophryns pleurostigma Gunth.

One, Borneo; three, Baram river (collected by C. Hose).

Bufo melanostictus Schn.

Four, Baram river (coll. by C. Hose); two, Borneo.

The largest is 112 mm. head and body; hind leg 160.

No. 5,776, but 43 mm. long, is probably the young of this species.

Bufo biporcatus Gunth.

Ten specimens; Baram river, Kuching, Tegora.

No. 5,783, from Baram, and 5,769, 40 mm. long, might about as well be assigned to *B. divergens* Peters, but with the small amount of material at my disposal, I am not inclined to separate them.

Bufo asper Graven.

Seven specimens; Kapuas river; Baram river (collected by C. Hose); Miri, Sarawak; Borneo.

The largest measures 140 mm. snout to vent; hind leg 185.

LOO CHOO ISLANDS.

The collections of Drs. Furness and Hiller in the Loo Choo Islands, in 1896, were made in Oöshima and Okinawa; the collectors' labels unfortunately do not distinguish between the two localities.

REPTILIA.

LACERTILIA.

Hemidactylus frenatus D. and B.

No. 5,722, ♀; 5,723, ♂, Loo Choo Islands.

Gehyra intermedia sp. nov.

Head large and ovoid; snout a little longer than the distance from eye to ear opening, about once and a fifth the diameter of the orbit. Forehead concave. Ear opening small, broadly oval. Body somewhat depressed; no lateral membrane on body, limbs nor

tail. Digits short, not webbed; inner ones well developed, but without a claw; inferior lamellæ double, oblique and separated by a groove. Upper surface covered with small rounded granules, largest on the snout; ten or eleven series of small round tubercles on the back, extending on the base of the tail; no tubercles on the head.

Abdominal scales larger than the tubercles, flat and slightly imbricated. Rostral nearly twice as broad as high, without distinct groove above. Nostril formed by the rostral, first labial and three nasals, of which the upper is largest and separated from its fellow by a small scale. Upper labials 9-10; lower 10-11. Mental large, pentagonal, the postero-lateral angles obtuse. Chin shields small, hexagonal and in several transverse series, the anterior largest, the others gradually decreasing in size to the small throat granules. Tail rather short, rounded and covered above with flat scales rather larger than the granules of the back; beneath with a median series of large scales. Nine preanal pores in an angular series, meeting centrally.

Color: dark-brown above, lighter beneath. Each lower labial with a dark spot in the centre.

Total length 104 mm., tail 46. Length of head 16, breadth 12. Body 42.

Type No. 5,721, Loo Choo Islands. Collected by Drs. Furness and Hiller, 1896.

This species differs from the rest of the genus by the presence of dorsal tubercles, such as are found in most *Hemidactylus*. In most details of scutellation it closely resembles *H. marmoratus* Hallowell,² and I would be disposed to regard them as identical, but the fact that Hallowell refers his specimen to the section *dactylotèles* of Duméril and Bibron, which included only species with fully clawed digits, makes such a conclusion impossible, and Hallowell's type being lost, no further investigation is now practicable.

***Japalura polygonata* (Hallow.).**

Nos. 5,742, 5,743, 5,745.

Two have eight upper labials, one has seven.

***Tachydromus smaragdinus* Boul.**

No. 5,736.

² *Proc. Acad. Nat. Sci. Phila.*, 1860, p. 491.

***Lygosoma pellopleurum* (Hallow.).**

Nos. 5,739, 5,740, 5,741.

The largest measures 100 mm. Color: rather pale-brown, with a narrow, indistinct, dark vertebral line beginning on the neck, and a wider lateral stripe beginning at the eye.

***Eumeces marginatus* (Hallow.).**

Eight specimens.

No. 5,737 has two postmentals, and the third supraocular is longitudinally divided.

OPHIDIA.***Dinodon semicarinatus* (Cope).**

Nos. 5,724, 5,725.

The scales in the black crossbands are mostly marked on their centres with the pale ground color.

The small basal keels and apical pits are barely distinguishable.

***Lachesis flavoviridis* (Hallow.).**

Eleven specimens; the largest measures 1,710 mm. (tail 272).

Batrachia.**ECAUDATA.*****Rana gracilis* Wieg.**

Seven specimens, the largest measuring but 48 mm.

***Rhacophorus viridis* (Hallow.).**

Polyptades viridis Hallow., Proc. Acad. Nat. Sci. Phila., 1860, p. 500.

Nos. 5,718, 5,719, 5,720 are unquestionably to be referred to this species, and as Hallowell's description is very meagre, I give the full characters.

Vomerine teeth in two slightly oblique series, beginning at the inner anterior edge of the choanæ. Head rather large; snout short and blunt; canthus distinct and rounded; loreal region slightly concave; nostril near the end of the snout; interorbital space nearly twice the width of upper eyelid; tympanum two-thirds the horizontal diameter of the eye. Fingers half, and toes two-thirds webbed; finger disks nearly as large as the tympanum, those of the toes smaller; subarticular tubercles rather small; inner metatarsal tubercle elongated; outer absent. Tibio-tarsal joint reaches to the snout in the largest specimen and just beyond the eye in the smallest. The skin on the back is smooth, on the belly and

under side of thighs strongly granular. A slight fold from orbit to shoulder above the tympanum.

Upper surface pale-olive in spirits (probably blue or green in life); underneath yellowish, with small irregular dark spots on the groin. The anterior and posterior surfaces of the thigh are whitish, with small dark spots which extend on the inner tarsus, and in one specimen on the dorsum of the foot.

Largest specimen: snout to vent 83 mm.; hind limb 125. Next largest: snout to vent 76 mm.; hind limb 114.

Microhyla undulata sp. nov.

Nos. 5,726, 5,727, 5,728 are referred to this genus, although they show no trace of a transverse ridge between the choanæ, a condition which may be due to immaturity.

The snout is short; interorbital space wider than the upper eyelid. Fingers and toes blunt, but not distinctly dilated; first finger shorter than second; toes nearly half webbed; tubercles small; outer and inner metatarsal tubercles distinct. The tibio-tarsal joint reaches beyond the eye. Skin smooth. Color: light-olive above, with an undulating dark-brown dorsal band, beginning on the vertex and broadening on the rump, with a narrow prolongation running forward to the snout, and a transverse one to the upper border of each eyelid. A dark stripe from the orbit through the shoulder and a little beyond. Hind legs light-olive, lighter beneath, crossbanded with black on the anterior side of lower leg and tarsus, and an indistinct dark stripe on the anterior border of the thigh. Ventral surface brown, without spots. In 5,728 the markings are obscure.

5,726. Length of head and body 23 mm.; hind limb 34.

5,728. " " " 20 " ; " " 34.

5,727. " " " 17 " ; " " 28.

This species much resembles the Indo-Chinese *Microhyla ornata* D. and B. in color pattern, but the toes are more extensively webbed and the legs are longer.

CAUDATA.

Molge pyrrhogastera ensicauda (Hallow.).

Six specimens.